



Malaria e-Newsletter

'Malaria: a single missed case may lead to thousand cases'

Official Newsletter of the
Anti-Malaria Campaign,
Ministry of Health, Sri Lanka

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Feature Article:

Why Malaria should not be a forgotten disease in Sri Lanka...



Figure 1: Action for a malaria free world

Source: World Health Organization (WHO) African Region
<https://twitter.com/who/status/1164832680497704960?lang=fa>

Malaria was a significant public health concern in Sri Lanka until the 21st century, negatively affecting both the country's health and its economy. In the past, malaria caused significant morbidity and mortality in the country and was a significant burden on the healthcare system with resulting negative impacts on the economy and livelihood of people. Malaria claimed the highest percentage of the public health budgets for insecticides, suppressed the gross earnings of the people and slowed down the socio-economic development of the country.

Throughout the 20th century, Sri Lanka had experienced several major outbreaks of malaria, in the periods 1934/35, 1967/68 & 1987/88. The most devastated one on record was the 1934/35, by which a total of 1.5 million individuals were infected & nearly 80,000 died. Even two decades ago, in the year 2000, 210,048 indigenous malaria cases were reported. While all those stories have been added to

the history, the painful memories of this disease are gradually fading out from the minds of most Sri Lankans including health professionals.

A few historical images still remain today that are testimony to a haunting tale. Depicted in Figure 2 below is an image provided by Professor Anula Wijeyesundere taken during the height of the malaria epidemic in Ceylon during 1934-1935.

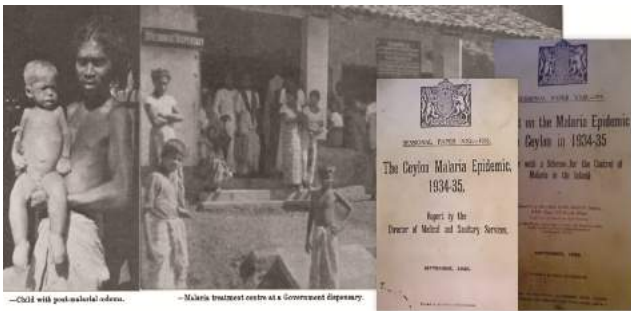


Figure 2: Malaria in the past the 1934/1935 epidemic

In 2012, Sri Lanka eliminated this dreadful disease from its soil and was certified by the World Health Organization (WHO) as a “malaria eliminated country” by late 2016.

Despite all the doubts whether the disease will return, the country has been kept free from local transmission of malaria & hence has been prevented re-establishment of the disease for nearly nine (09) years now, as a result of the strenuous effort taken by Anti Malaria Campaign (AMC). The timeline of malaria elimination in Sri Lanka is depicted in Figure 4 and this image highlights some of the crucial and timely actions taken by healthcare professionals. The image also highlights the consequences of ceasing funding for malaria control which resulted in a resurgence of malaria leading to an epidemic in 1967-1968.

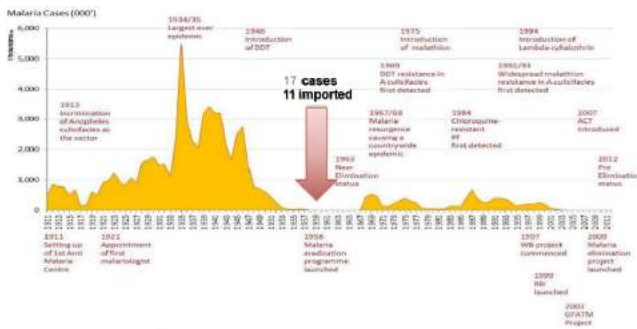


Figure 3: Timeline of malaria elimination in Sri Lanka

Source: AMC

At present, most probably without their knowledge, all

Sri Lankans reap benefits from being free of the sufferings that would have been caused by this devastating disease which shattered the country's socio-economic wellbeing over the centuries in the past.

Malaria elimination from Sri Lanka was achieved in 2012 by elimination of the parasite. Since then Sri Lanka is in the Prevention of Reintroduction & Re-establishment (PoR) phase. However even in PoR, malaria parasites are continuously brought into the country through travellers who contracted the disease from overseas & therefore, 50-60 imported malaria cases are reported annually. Although importation is the only source of malaria in the country at present, due to the existence of vector mosquitoes in most parts of the country which were previously endemic to malaria, the potential risk of malaria reintroduction remains very high.

The risk of re-introduction of malaria into the country should no longer be considered lightly. This is highlighted by the fact that six years after malaria elimination, in 2018, an imported case of *Plasmodium vivax* malaria in a foreign worker (index case) led to the first case of introduced malaria in a Sri Lankan national, alerting & alarming all the relevant authorities. In that instance, the role rendered by the effective entomological, parasitological & case surveillance systems and the activities carried out by the rapid outbreak response teams of the AMC were well recognized. It was through timely activation of such systems that transmission was limited and further spread of the disease was prevented successfully.

Another threatening & alarming incident that happened recently during the PoR phase was the detection of a transfusion-induced malaria case in May 2021. The last reported case of transfusion malaria was in 1966. Fortunately, the recipient of the blood pack, a thalassaemia patient survived.

As stressed by the programme objectives, during the PoR phase AMC has to prevent re-introduction and re-establishment of malaria and maintain zero mortality due to malaria in the country. This task is much more challenging than malaria control, as this needs innovative approaches to ensure tracking risk population, assessing local receptivity & vulnerability, maintaining satisfactory awareness among the health care workers in the curative & preventive

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sector as well as the general public, preparedness at the central level & local level to prevent transmission risk whenever it requires and many more. Therefore, keeping Sri Lanka malaria free is a huge task which can only be achieved by proper planning, timely implementation & leadership of AMC with its stakeholders & by the vigilance of clinicians.

In the PoR phase AMC's major concern is how to sustain the malaria-free status of the country, in collaboration with their stakeholders. The AMC cannot achieve this target alone and each & every person in the community has a definite role to play. Doctors belonging to any category -whether they are interns, medical officers, postgraduate trainees or consultants- have a major role, as they encounter febrile patients in health institutions or clinics in the state sector as well as the private sector.

Being an eliminated, rare and forgotten disease in the country today, clinicians fail, only too often, to think of malaria in their differential diagnoses when a patient presents with fever. They are not to blame because there are far more common causes of fever in the country such as dengue, leptospirosis & with the ongoing pandemic, COVID -19. However, malaria can be suspected if a detailed history is taken from the patient, particularly details pertaining to recent travel overseas, especially to a malaria endemic country which, if present, places malaria very high on the list of differential diagnoses & becomes a priority condition to be tested for.

In settings other than hospitals and clinics, the AMC and its regional staff members carry out robust surveillance activities, even during the COVID-19 pandemic, including among travellers in quarantine centres as depicted in Figure 4 given below.



Figure 4: Blood for microscopy taken in quarantine

centres among repatriates from malaria endemic countries by public health field staff

Source: AMC database

Malaria can be easily diagnosed by testing blood, through a rapid diagnostic antigen test (RDT) kit or/and microscopy. These diagnostic facilities, which guarantee quality-assured testing through well-trained laboratory staff, are widely available throughout the country. The AMC ensures regular capacity development of hospital laboratory staff, both in the state as well as the private sector. More importantly, the AMC has an efficient system to report malaria suspected cases. The AMC reporting system is strengthened by the AMC staff who work 24/7 throughout the year & is facilitated by the 24/7 AMC hotline 0712-841,767 or 0117-626,626.

The key message that the AMC wishes to impart vigorously to all healthcare personnel engaged in patient care throughout the country is - **“when a patient presents with fever, ask for a travel history and if there is a recent travel history, test for malaria”**.

Adhering to the above concept alone, can not only save lives of patients who unknowingly are infected with malaria, but also prevent transmission of the disease in the country & help the AMC to keep the country malaria free in the future.

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3. Dharmasiri G, Perera AY, Harishchandra J, Herath H, Aravindan K, Jayasooriya HTR, Ranawaka GR, Hewavitharane M. First record of *Anopheles stephensi* in Sri Lanka: a potential challenge for prevention of malaria reintroduction. *Malar J*. 2017 Aug 10;16(1):326. doi: 10.1186/s12936-017-1977-7. PMID: 28797253; PMCID: PMC5553605.

Written by: Dr. Priyangani Silva (Medical Officer-AMC)

Update from Sri Lanka: case summary (as at 30th September 2021)

As of September 30th 2021, the total number of cases was 15; fourteen (14) imported cases & one (01) transfusion-induced case of *P. falciparum* malaria.

As depicted in Figure 5a and 5b, out of the 14 imported cases, five originated from South Sudan, 3 cases from Uganda, and one each were reported from travellers returning from Mozambique, Central Africa, Liberia and Djibouti. Malaria was diagnosed in these individuals upon their return to Sri Lanka.

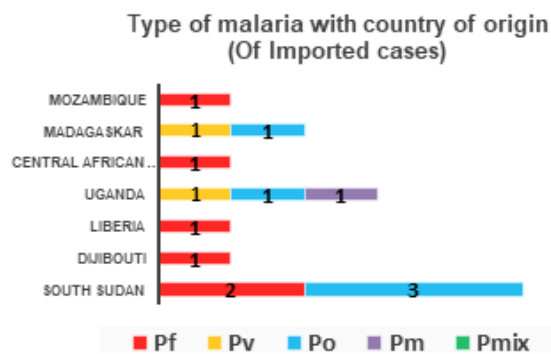


Figure 5a: Type of malaria with country of origin (Please zoom to expand image)

Country of origin of imported malaria cases as at July 2021

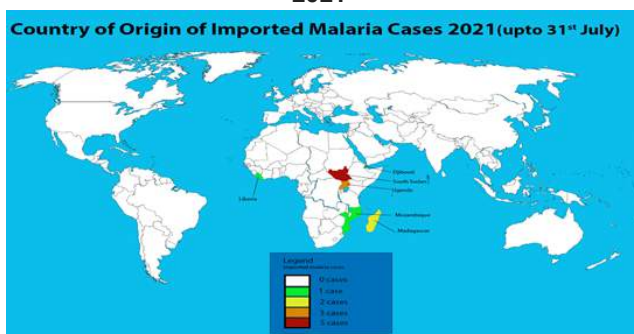


Figure 5b: Countries from where malaria was imported
Source: AMC database
(Please zoom to expand image)

A majority of the imported malaria cases were due to *P. falciparum* (Figure 6).

Type of Malaria

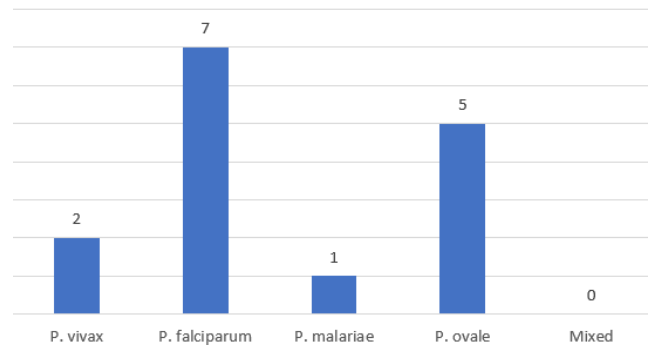


Figure 6: Type of malaria among the imported cases seen in Sri Lanka (Please zoom to expand image)

Global Update: burden due to malaria

Globally, an estimated 229 million malaria cases were diagnosed in 2019 from 87 malaria endemic countries. This is a decline from 238 million in 2000 across 108 countries that were endemic for malaria.

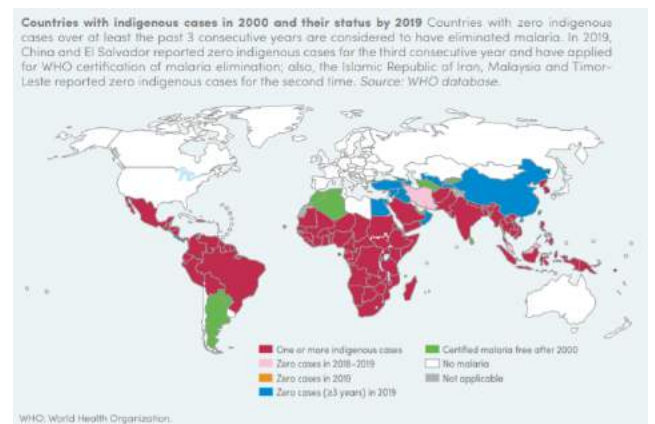


Figure 7: Countries with indigenous cases in 2000 and their status by 2019
(Please zoom to expand image)
Source: World Malaria Report, WHO 2020
https://cdn.who.int/media/docs/default-source/malaria/world-malaria-reports/9789240015791-double-page-view.pdf?sfvrsn=2c24349d_10

Global trends in malaria case incidence rate (cases per 1000 population at risk) is depicted in Figure 8a and the mortality rate (deaths per 100 000 population at risk) from 2000–2019 is depicted in Figure 8b given below.

Malaria case incidence decreased from 80 in 2000 to 58 in 2015 and 57 in 2019. Malaria deaths also have reduced steadily over the period 2000–2019, from 736 000 in 2000 to 409 000 in 2019.

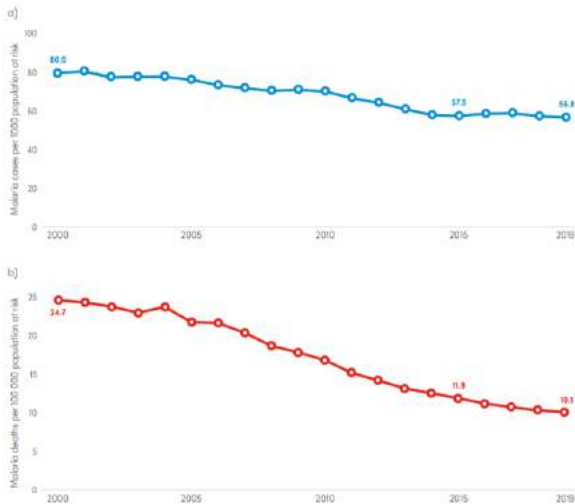


Figure 8: Global trends in malaria incidence (a-top) and mortality rates (b-bottom)

Source: World Malaria Report, WHO 2020

https://cdn.who.int/media/docs/default-source/malaria/world-malaria-reports/9789240015791-double-page-view.pdf?sfvrsn=2c24349d_10



Entomology Update: Current Receptivity Pattern of Primary Vector

Entomology surveillance is one of the key activities conducted by AMC. Those were conducted throughout the country to fulfill two main objectives.

- to assess the receptivity to prevent forward transmission by taking appropriate timely actions within the circumscribed locality when a malaria case is reported
- To assess the receptivity of a focus through entomological investigations if the vulnerable groups or individuals have been identified.

Anopheles culicifacies is identified as the primary vector that transmits malaria in Sri Lanka. In addition, five other *Anopheles* species namely, *An. subpictus*, *An. annularis*, *An. tessellatus*, *An. varuna*, and *An. vagus* are identified as secondary vectors that transmit malaria with lesser competence in the past. In 2016, a potential malaria vector *An. stephensi* -the urban malaria vector in India- was identified in

Northern province.

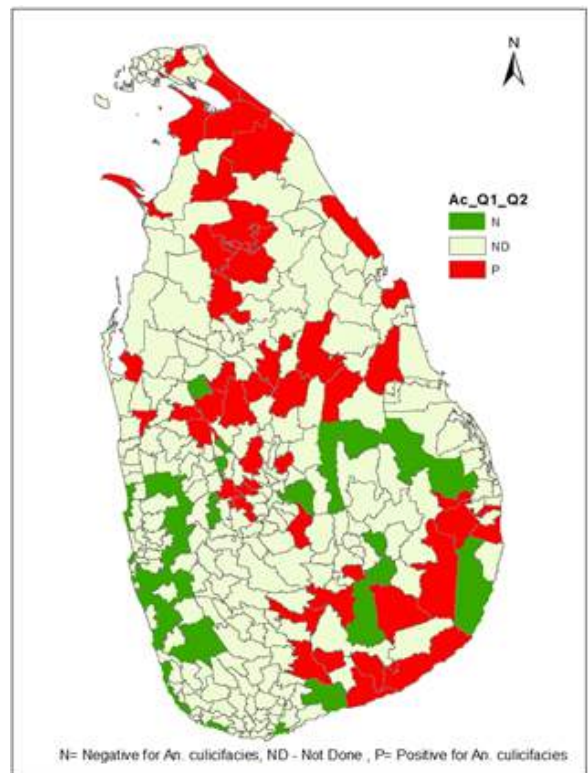


Figure 9: Current receptivity pattern of the primary vector (Please zoom to expand image)

Prepared by: Ms. Priyadarshani Somasekaran (Entomologist - AMC)

Parasitology Update: Parasitological Surveillance

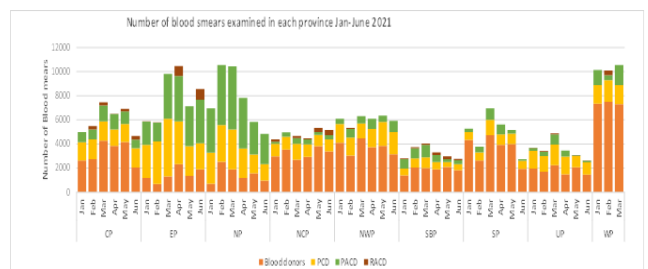


Figure 10: Parasitological surveillance (Please zoom to expand image)

Parasitological surveillance is a key intervention in malaria PoR. Passive case detection (PCD) of suspected malaria patients attending medical institutions and proactive and reactive surveillance (PACD and RACD) targeting high-risk individuals are the major components of parasitological surveillance carried out by the Anti Malaria Campaign.

However, due to the COVID -19 pandemic compared to the previous years there has been a marked

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reduction in the surveillance activities carried out during the first six months of 2021.

This graph shows the number of blood smears done in each province during the period from January to June 2021. In all provinces, except for the Eastern and Northern provinces, screening of blood donors is the major proportion of blood smears tested.

In the Eastern Province, PCD accounts for the highest proportion of blood smears done while for the Northern province PACD accounts for the highest proportion. RACD has been carried out only in several provinces.

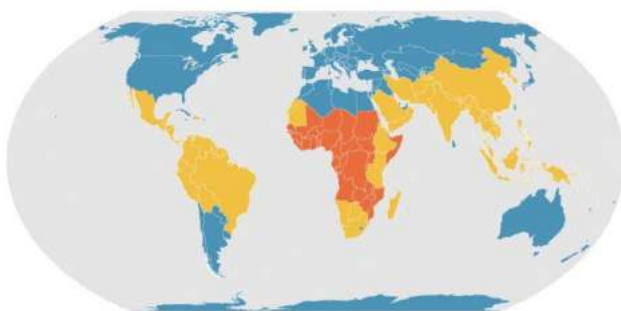
Prepared by: Ms Kumudu Gunasekara (Parasitologist-AMC)



- The 'Do I know?' Feature - Do I know Malaria Endemic Countries?

For this issue of the *Malaria e-Newsletter* we would like to tell you about the countries to which travellers visit and can import malaria to Sri Lanka.

If you treat a fever patient with a travel history to one of the following countries: remember to include **malaria** in your differential diagnosis!



© CDC

■ Malaria transmission is not known to occur
■ Malaria transmission occurs in some places
■ Malaria transmission occurs throughout

Figure 11: Malaria endemic countries

Source: CDC (Please zoom to expand image)

Countries which report malaria in alphabetical order:

A	Afghanistan, Angola
B	Bangladesh, Benin, Bhutan, Bolivia, Botswana, Brazil, Burkina Faso, Burundi
C	Cambodia, Cameroon, Central African Republic, Colombia, Comoros, Congo, Côte d'Ivoire
D	Djibouti
E	Ecuador, Equatorial Guinea, Eritrea, Ethiopia
F	French Guiana
G	Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana
I	Indonesia, Iran
K	Kenya
L	Lao People's DR, Liberia
M	Madagascar, Malawi, Malaysia, Mali, Mauritania, Mayotte, Mozambique, Myanmar
N	Namibia, Niger, Nigeria
P	Pakistan, Panama, Papua New Guinea, Peru, Philippines
R	Rwanda
S	Sao Tome & Principe, Saudi Arabia (Yemen Border), Senegal, Sierra Leone, Solomon Islands, Somalia, South Africa, Sudan, South Sudan, Suriname, Swaziland
T	Tajikistan, Thailand, Timor-Leste, Togo
U	Uganda, United Republic of Tanzania
V	Vanuatu, Venezuela, Viet Nam
Y	Yemen
Z	Zambia and Zimbabwe

Recent Publications from AMC:

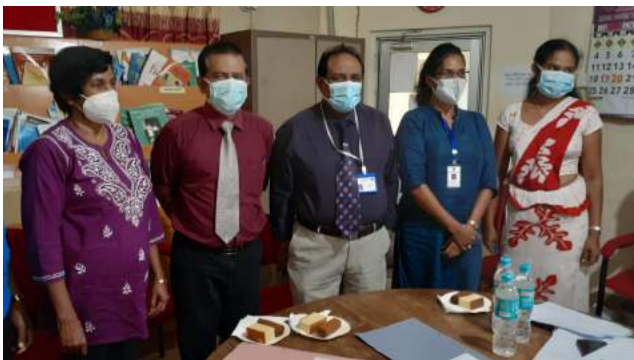
Here is a list of our most recent publications:

1. Chulasiri P, Ranaweera P, Sudarshan P et al. Transfusion-induced *Plasmodium falciparum* malaria in a beta thalassaemia patient during the prevention of re-establishment phase in Sri Lanka. *Malar J* 20, 352 (2021). <https://doi.org/10.1186/s12936-021-03881-1>
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Image Gallery:



Discussion with Dr Palitha Bandara, Provincial Director of Health Services of North Central Province



Discussion with Dr Nandakumar Deputy Provincial Director of Health Services of Northern Province



Discussion with clinicians at BH Wellwaya in Moneragala District



Clinician training at DGH Kalutara



Performing entomological surveys at Hambantota Harbour

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We bid farewell to two pillars who worked tirelessly in the field:



Felicitation of RMO Puttalam Dr Ashoka Premasiri on his retirement following decades of services in the field of Malaria



Felicitation of RMO Kurunegala Dr Senerath Bandara on his retirement following decades of services in the field of Malaria

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RMO Batticaloa	0652222931
RMO Hambantota	0472258135
RMO Galle	0913096814
RMO Matara	0412222004
RMO Kurunegala	0372222193
RMO Maho	0372275254
RMO Puttalam	0322265319
RMO Badulla	0552229560
RMO Moneragala	0552276698
RMO Kandy & N' Eliya	0812210687
RMO Matale	0662222295
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